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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/523,067

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Felix Blank

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EXAMINER

RADEMAKER, CLAIRE L

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

12/24/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/523,067	<b>Applicant(s)</b> BLANK ET AL.	
	<b>Examiner</b> CLAIRE L. RADEMAKER	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 17-18 & 20-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17, 18 and 20-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This office action is in response to the amendment filed on September 10, 2009. Claims 17-18 & 20-25 are pending and are rejected for reasons of record. Claims 1-16, 19, & 26-37 are cancelled. Claims 17 & 20 have been amended.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on June 24, 2009.

### ***Claim Rejections - 35 USC § 102***

3. Claims 17-18, 20 & 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Mizuno et al. (US 2002/0012827).

With regard to claims 17-18, 20 & 24, Mizuno et al. discloses a fuel cell (paragraph [0042]; Figures 1 & 3) comprising:

A membrane electrode assembly (MEA) (31, 32, & 3, paragraphs [0043] & [0046]; Figure 1);

A source of fresh operating substances (60 / 63, paragraph [0047]; Figures 1-2);

A bipolar plate / separator (30, paragraphs [0042] & [0055]; Figures 1 & 4B) having an anode-side gas distributor structure for distributing anode reactants (paragraphs [0046]-[0047]; Figures 1 & 4B), a cathode-side gas distributor structure or distributing cathode reactants (paragraphs [0046]-[0047];

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Figures 1 & 4B), a guide passage structure (paragraph [0054]) for distributing a cooling medium (paragraph [0054]), wherein the anode-side gas distributor structure and the cathode-side gas distributor are each divided into at least a first field (90 / 92, paragraphs [0045]-[0046] & [0055]; Figure 1) and a second field (91 / 93, paragraphs [0045]-[0046] & [0055]; Figure 1), where the first field has an entry port (40 / 50, paragraphs [045] & [0047]; Figure 1) and an exit port (41 / 51, paragraphs [045] & [0047]; Figure 1) and the second field has an entry port (41 / 51, paragraphs [045] & [0047]; Figure 1) and an exit port (42 / 52, paragraphs [045] & [0047]; Figure 1) for the reactants, wherein the exit port of the first field is connected to an entry port of the second field (paragraphs [045] & [0047]; Figure 1), and an inlet port coupled to the source of fresh operating substances (60 & 40 / 50 & 63, paragraph [0047]; Figures 1-2) where the exit port of the first field and the entry port of the second field are coupled together (41 / 51, paragraphs [0045]-[0047]; Figure 1) and where the inlet port is coupled to the exit port of the first field and the entry port of the second field (40 / 50 & 41 / 51) via a recessed portion (90 / 92, paragraphs [0046] & [0055]; Figures 1-2) thereby providing fresh operating substances into the cathode-side gas distributor structure / anode-side gas distributor structure (paragraphs [0045]-[0047] & [0055]; Figures 1-2);

A feed line disposed between the exit port of the first field and the entry port of the second field (paragraphs [045] & [0047]; Figure 1) and configured to introduce further reactants (paragraphs [045] & [0047]; Figure 1); and

At least one reactant adjustment device / serpentine grooves configured to adjust a flow rate of the reactants for the first and second fields separately (paragraph [0045]; Figure 1).

While Mizuno et al. fails to specifically state that the serpentine grooves through which the reactants flow will adjust the flow rate of the reactants, one of ordinary skill in the art would understand that the flow rate of the reactants flowing through the serpentine grooves would inherently be adjusted by having to flow in a serpentine path.

4. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 2002/0012827), as applied to claim 17 above, and further in view of Iwase et al. (US 6,245,453).

The disclosure of Mizuno et al. as discussed above is fully incorporated herein.

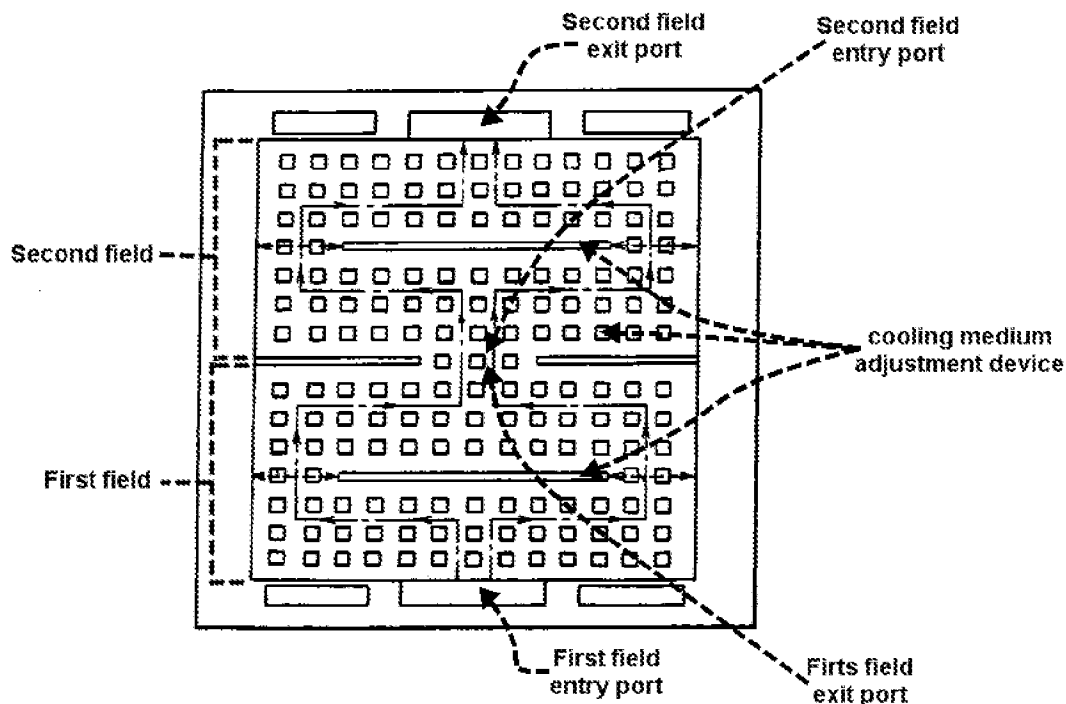
With regard to claims 21-23, Mizuno et al. fails to teach the concept of the first and second fields each including a cooling medium entry port and a cooling medium exit port for the cooling medium, where the cooling medium exit port of the first field is connected to the cooling medium entry port of the second field, or teach a cooling medium adjustment device configured to adjust one of a flow rate and a condition of the cooling medium separately for the first and second fields.

Iwase et al. teaches the concept of a fuel cell (col. 7, lines 1-6) comprising a membrane electrode assembly (MEA) (51 & 52 & 53, col. 7, lines 7-9), a guide passage structure for distributing a cooling medium (col. 16, lines 28-43; Figure

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16), and a flowfield plate having first and second fields (col. 16, lines 28-43; Figure 16), where the first and second fields each include a cooling medium entry port and a cooling medium exit port (col. 16, lines 28-43; Figure 16) for the cooling medium, where the cooling medium exit port of the first field is connected to the cooling medium entry port of the second field (col. 16, lines 28-43; Figure 16), and teaches the use of cooling medium adjustment device (613 and/or 655 & 656, col. 16, lines 28-43; Figure 16) configured to adjust a flow rate of the cooling medium separately for the first and second fields (col. 16, lines 28-43; Figure 16).

The following illustration (modified Figure 16 of Iwase et al.) is provided for clarification:



It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the flowfield plate cooling medium flowfield structure of

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Mizuno et al. with the flowfield plate cooling medium flowfield structure of Iwase et al. in order to improve the performance of the fuel cell due to improved diffusibility and flow rate (col. 16, lines 28-43 & col. 15, lines 51-54).

5. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 2002/0012827), as applied to claim 17 above, and further in view of Kearl (US 2003/0022052).

The disclosure of Mizuno et al. as discussed above is fully incorporated herein.

With regard to claim 25, Mizuno et al. fails to teach a temperature sensor.

Kearl teaches the concept of a fuel cell bipolar plate (10, paragraphs [0027] & [0066]) comprising a temperature sensor (17, paragraphs [0059]-[0063]) in order to improve the reliability and efficiency of the fuel cell and allow the fuel cell to operate under stable conditions (paragraphs [0059] & [0010]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of a fuel cell bipolar plate comprising a temperature sensor of Kearl to the bipolar plate(s) of Mizuno et al. in order to improve the reliability and efficiency of the fuel cell and allow the fuel cell to operate under stable conditions (paragraphs [0059] & [0010]).

### **Response to Arguments**

#### **Claim Rejections - 35 USC §102 & §103**

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6. Applicant's arguments with respect to claims 17-25, filed on September 10, 2009, have been considered but are not persuasive.

On page 5 of the Applicant's Response, Applicants argue that "Mizuno et al. does not disclose the limitation of the 'inlet port' of claim 17... [and that] because hole 41 of Mizuno et al. is not coupled to a source of fresh operating substances, Mizuno et al. does not disclose the limitation of the 'inlet port' required by claim 17" (Applicant's Response, page 5).

The Examiner respectfully disagrees with the Applicants argument that "Mizuno et al. does not disclose the limitation of the 'inlet port' of claim 17... [and that] because hole 41 of Mizuno et al. is not coupled to a source of fresh operating substances, Mizuno et al. does not disclose the limitation of the 'inlet port' required by claim 17" (Applicant's Response, page 5) because Mizuno et al. discloses a source of fresh operating substances (60 / 63, paragraph [0047]; Figures 1-2) and an inlet port coupled to the source of fresh operating substances (60 & 40 / 50 & 63, paragraph [0047]; Figures 1-2) where the exit port of the first field and the entry port of the second field are coupled together (41 / 51, paragraphs [0045]-[0047]; Figure 1) and where the inlet port is coupled to the exit port of the first field and the entry port of the second field (40 / 50 & 41 / 51) via a recessed portion (90 / 92, paragraphs [0046] & [0055]; Figures 1-2) thereby providing fresh operating substances into the cathode-side gas distributor structure / anode-side gas distributor structure (paragraphs [0045]-



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[0047] & [0055]; Figures 1-2). The Examiner notes that, as currently claimed, the claims does not limit or require how the inlet port is coupled to the exit port of the first field and the entry port of the second field. Additionally, as currently claimed, the claims do not require that a mixture of fresh and not-fresh operating substances be supplied to the exit port of the first field and/or the entry port of the second field (for Example language, see instant Specification paragraph [0012]).

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE L. RADEMAKER whose telephone number is (571)272-9809. The examiner can normally be reached on Monday - Thursday, 8:00AM - 4:00PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. L. R./  
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/  
Supervisory Patent Examiner, Art Unit 1795

